The new content, moreover, increases the variety, complexity, richness of a culture.

Thus the accidental and the deterministic appear as two inseparable ingredients of the historic process. Leave out the deterministic, and history becomes a hodge-podge of adventitious things and events, a something without rhyme or reason; leave out the accidental, and grave injustice is done to reality, for law and order is then claimed as a fact, whereas it is at best but an aspiration, a tendency, not strong enough to have its way wholly, but fully strong enough to regulate, and to that extent to control, the stream of accidental fact.

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## FREE WILL AND INTUITION

THE problem of free will appears to be a problem only because, as Bergson well says, the conditions are not clearly stated. The difficulty of stating the conditions is due to a hazy idea of the meaning of cause and effect.

One of the earliest experiences a human being has is what the intellect defines as a "succession in time." This sort of experience is with us constantly. We know some things happen before other things happen. This knowledge is due to memory. It is this experience which underlies our concept of cause and effect. Without such an experience cause and effect would mean nothing to us. But before the concept of cause and effect can enter our consciousness, to this experience must be added another experience which the intellect defines as "repetition." The oftener a succession in time is repeated the stronger is our belief in cause and effect. Especially is this belief strong if we can repeat the succession at will in a laboratory. Given this possibility, science steps in and says the earlier event bears to the later event the relation of cause to effect. This is all that science means by cause and effect.

Now when we say a thing is repeated, just what do we mean by that? Suppose I go into a laboratory to make an experiment with a falling weight. I used an Atwater machine and measure the time it takes a weight to fall. By this I mean I compare the space passed over by a certain motion of the weight, with the space passed over by the motion of the hands of an accurate clock. All that science does when it thinks it measures time is to compare the spaces passed over by different motions. Very well. I record my results. I then do the same thing the next day and the next and so on. I have then recorded what I call a repetition of a succession in time. It is from

just this foundation that science starts. Now have I repeated the experiment? It appears so and all science makes that assumption. Let us see, however, just what the phenomenon really was. When I first let the weight fall it moved not only relative to the machine and the floor, but there was a certain relation between the weight and every other particle of matter in the universe. The phenomenon really consisted of the whole of these relations. I ask then, was the phenomenon repeated? Certainly not. But just because, out of the whole phenomenon only a very small portion of all the relations held any interest for me, *i. e.*, could affect my possible actions, I restricted my attention to that small portion and found it could be repeated. Hence I say there is such a thing as repetition. Science is a tool designed to help action and it is justified in drawing conclusions from a portion of the whole relative only to possible actions, but can philosophy do this sort of thing with consciousness? To draw conclusions from a portion of the whole is to say that the whole consists of parts. Can we say that of consciousness?

By consciousness I mean the living *present* as we know it in ourselves. Now the first thing to say about the present is that it is lived but can not be described. A little thought will prove this. The minute you start to describe the present, the present has become at once the process of describing the past. No matter how we struggle and what subtleties of reasoning we introduce, we can not get away from this fact. If I ask you to draw a picture, but move the picture rapidly before your eyes, the first thing you will say is, "Hold it still. How can I draw it if you keep moving it about?" Just so. But you can not hold consciousness still and remain conscious. How then can you describe it? If you can not describe it why do you say it is composed of parts? If it is not composed of parts how can there be repetition in it? What you describe is the *past*. The past is fixed, static, and has special qualities and in describing it you will naturally pick out similarities and from this you get the false idea of repetition in consciousness. Once you realize that the *present*, which is consciousness, is lived but can not be described, while the *past* can be described but is not lived, then you will see that what you take to be repetition in consciousness is really nothing but repetition in the past. You examine the past but think you are examining the present.

The same misunderstanding shows itself in the problem of motion. Some philosophers believe they can describe motion. They start in by saying they are going to describe a motion from $A$ to $B$. But if the motion is from $A$ to $B$ either it has stopped at $B$ or has gone beyond $B$. If it stopped at $B$ it no longer exists and how can you describe what does not exist? On the other hand if it has

gone beyond *B* nothing you say about *AB* is connected with the motion because by the hypothesis the motion is not there, but somewhere else, namely beyond *B*. What is described is not the motion but the path passed over by the motion. You describe space but think you are describing motion. This is the same kind of error noted above. Now in consciousness, motion experienced is properly called time, or, as Bergson says, duration. Time, like the present, is experienced but can not be analyzed, while space, like the past, can be analyzed but is never experienced. It seems absurd to say that space is never experienced but a little thought will prove it. A baby infers space by finding that more time is experienced between sensations *A* and *B* than between sensations *B* and *C* when it is doing what we call creeping around. Space, as we know it, is the first inference we draw from our experience of time. We draw this inference so early in life that we forget that it is an inference. It is, however, just that and it is extremely probable that this inference is not drawn, in the shape we draw it, by animals and insects because their intellectual life must be different from ours.

The lack of repetition in consciousness means the lack of the ability to predict, because prediction is based on repetition. You can not predict the result of a first event, you can only observe that result and use your observation as a basis from which to predict the result if the event is repeated. Therefore, you can predict nothing concerning consciousness and that is all that is meant by free will.

We have found then a radical distinction between the present and the past, time and space. We can also find a distinction just as radical between instinct and intuition on the one hand and reason on the other hand.

We will start first with instinct and I will cite the well-known case in insects so thoroughly studied by Fabre. The yellow winged Sphex chooses a cricket for its victim. The cricket has three nerve centers which control its three pairs of legs. The Sphex stings the cricket first under the neck, then behind the prothorax and then where the thorax joins the abdomen. The result is that the cricket is paralyzed, it can not move, but it does not die at once. The eggs of the Sphex are then laid and the young, when hatched, have fresh meat on which to live. This is an example of instinct which can not be explained by reason. It is not possible to explain instinct intellectually, but a reference to a certain instinct in man may make it understood. Consider the sex act upon which reproduction depends. Before puberty you can reason with children about this act as much as you like and they will not understand what you mean, but after puberty reasoning is superfluous. Without any intellectual knowledge of the body or the race value of the sex act, a boy and girl,

under proper conditions, will perform the act the right way without any hesitation. Why? Because, when growth reaches a certain point instinctive knowledge appears with it. Now the difference between instinct and intuition is that instinct is limited by the growth and condition of the body while, except in the abnormal, intuition is not limited in this way but is dependent upon what we call experience, *i. e.*, conditions the body lives through. But it is like instinct in that it gives us a knowledge no reasoning can disturb and unhesitatingly we act on this knowledge.

What now is the difference between intuitional and intellectual knowledge?

As it happens, I was one of the first in this country to take up the study of aeronautics at about the year 1890. My study convinced me that it was possible to fly, and I did at that time and later publish reasons why it was possible. These reasons, however, produced no effect. At the present time many have seen machines flying through the air, they know flying is possible but they did not get that knowledge through reasoning, they actually saw the machines fly, *i. e.*, the knowledge they have of flying is intuitional, not intellectual. They can not give you any reasons why the machine flies but they know it does fly and no amount of reasoning can convince them that flying is impossible, whereas before they saw a machine fly no amount of reasoning could convince them it could fly, as I very well know. That is only to say "seeing is believing." But what does this mean in philosophy? It means that intuitional knowledge, which is the knowledge we get direct from experience without using our reason, is stronger than the knowledge we get by using our reason, which is intellectual knowledge.

One of the greatest changes in educational systems is the move from the text-book to the laboratory. But in philosophy this means the substitution of intuitional for intellectual knowledge.

Bergson is very clear in showing thoroughly the limitations of the intellect, but when he describes intuition his position seems to me to be weak. He seems to make of it something rare, exceptional, subtle, coming only to a few people. This is not so. Intuition has too long stood for something elusive, on the order of the occult. It is nothing of the sort. It is a common fact in experience.

Even in those sciences which seem to be entirely intellectual, like mathematics, it can be shown easily that intuition is their foundation. Our knowledge of axioms is entirely intuitional knowlege. Every premise from which reasoning starts is intuitional knowledge, or if not, the reasoning has to go back to the point where the premise *is* intuitional knowledge.

It will be objected that while this sort of knowledge may be called intuitional since it comes direct from personal experience, is not arrived at through reason and hence can not be called intellectual, still this is not what is ordinarily called intuition. This is true. Generally the word intuition is used to mean that which makes us believe and act without reason and yet which seems not to be traceable to anything in our experience. It appears to come "out of the blue" so to speak. It is just this characteristic which makes the mystical type of man believe strongly in intuition and the practical type skeptical of it. This characteristic of what, ordinarily, is called intuition, is due to the fact that an intuition of this type can not be traced to any particular part of our experience. But this is simply because it issues from the *whole* of our experience up to the time of the intuition. It is only this type of intuition which generally goes by the name of intuition; the other type, which issues from some definite portion of our experience, is called "common sense." The difference between the two types is just the difference between the free act and the not free act. The former issues from the *whole* man and as the *whole* man is never repeated the act is free; the latter issues from some portion of him, *i. e.*, a habit, a reflex or a reaction to stimulus which can be repeated, hence the act is not free. If I play the violin with exceptional skill upon a certain occasion, the particular skill shown can not be traced to any particular day's practise, it issues from the *whole* of my experience as a violinist. All artists understand this. All artists understand that the value of their work is determined by the quality of the intuition which issues from the *whole* of their experience at the moment they start creating.

So, what is called "intuition" issues spontaneously from the whole of our experience, while what is called "common sense" issues from some particular, limited part of our experience. The philosopher, however, is bound to hold "common sense" to be intuitional knowledge, and he knows, if he is wise, that it is far superior to intellectual knowledge.

In spite of the fact that the man of the street reads little philosophy, the teachings of philosophers filter down to him through the schools and it is unfortunate that we are at present under the influence of the teachings of a philosopher whose theory of knowledge admitted only the intellect, namely, Kant.

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